

responded satisfactorily, but Corsican pine was so susceptible to sap stain and insect attack that the timber was of little value. Later fellings confirmed these general conclusions.

52. *Kiln Drying*.—As in the past, assistance has been given to firms operating or installing drying-kilns. A local company is studying the practicability of using the vapour-drying process (developed by the Taylor Colquitt Co. in the United States of America) for drying sawn timber. From the pilot-plant phase the process has now been translated to commercial-plant operation. Methods have been suggested for improving vapour circulation by alterations to stacking procedure, as the result of inspection by Forest Service Officers of the initial charges dried in the commercial cylinder.

53. *Wood Chemistry*.—The most important work in progress relates to resin content in several pine timbers. Most of the ether-soluble determinations (quantitative tests) and also the more fundamental qualitative tests of resinous extracts from insignis, Corsican, and lodgepole pines are made by the Dominion Laboratory. Some conclusions drawn from the tests of ether-soluble content are: Pith in insignis pine may contain as much as 46 per cent. (based on oven-dry weight) of ether-soluble resin. The benzidine test is in general a good index of the heartwood of insignis pine in so far as ether-soluble resin content is concerned. The effect attributable to seasonal change upon ether-soluble resin content of the wood of Corsican and lodgepole pines was tested on trees representing the three crown classes, felled in July (dormant period), in October (two weeks after height growth commenced), and in November. In Corsican pine the commencement of growth was reflected by doubling of the ether-soluble content at the 6 in. and 4 in. diameter levels in dominant and co-dominant trees; later a comparable increase occurred in the suppressed tree class, while a slight decrease was recorded in the other crown classes. In lodgepole pine there was no well-defined change.

54. A chemical study of tawa wood is concerned with the nature of an oily substance noticed on freshly-cut cross-sections, the corrosive action of wood (or bark) contents upon metal-work at kiln temperatures, a constituent causing dulling of planer blades and other edged tools, and chemical substances which cause black flecks, pink staining (result of hot-water treatment), and other discolorations.

55. *Wood-preservation*.—With the increase in production of creosoted fence-posts and telephone poles during the year, and further increased production planned for the future, the limited availability of locally-manufactured creosote has been a matter for some concern. While every endeavour is being made to increase the production of suitable grades of coal-tar creosote in the country, attention has also been paid to creosote petroleum-oil mixtures. Tests in this connection have shown that the majority of petroleum oils available in New Zealand at economic cost for this purpose are not compatible with creosote. However, with suitable bridging solvents sludge formation can be controlled, and tests in laboratory and pilot plant indicate that a suitable mixture of low-temperature creosote and some petroleum oils, available in the country, can be formulated for commercial wood-preservation purposes.

56. The air-drying of large-dimension Corsican-pine stock such as poles, under unfavourable conditions, is accompanied by appreciable degrade due to decay. The rate of drying and the effect of light-preserved treatments prior to stacking for air drying have been investigated. The immersion of Corsican-pine poles and posts in heated solutions of sodium pentachlorophenate, followed by air drying, retards and minimizes but does not entirely eliminate infection by decay or staining fungi. Timber treated in this manner appears to be in a satisfactory condition for sterilization, preservative treatment, and subsequent use. A quantitative analysis of the degree of fungal activity and its progress throughout the year, particularly in relation to reductions in the strength properties, are important considerations in connection with the successful utilization of this species, particularly in the form of preserved poles.